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ABSTRACT

This study examined the applicability of Watts' Human Interaction Scale to day care settings, and was also concerned at a more general level with the question of whether it is possible for day care settings to approximate good homes. Six 2-year-olds in each of two day care centers were each videotaped for a total of 45 minutes in a variety of behavioral settings. Results indicated that: (1) the scale can be used in group settings with the addition of a distinction between adult/individual interaction and adult/group interaction; (2) interaction involving activities and interaction techniques which Watts found associated with high competence development occurs most frequently in structured activities and to some extent in free play settings. Also discussed: other results involving differences in the two day care centers; the adult/group mode of interaction; behavior setting sampling; adult responsiveness; adult/child ratios; quality versus quantity of interaction; and assessment of the direct impact of day care environments on the development of competence. It is concluded that day care can provide experiences comparable to good homes. (MS)

Competence Supporting Aspects of Day Care Environments - A Preliminary Study

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The specific research reported in this paper concerns the applicability to day care settings of environmental categories developed by Jean Watts for the stu of infants' and toddler's home environments. At a more general level, we are concerned with the question of whether it is possible for day care settings to approximate "good homes".

How shall we know what a "good home" is? In the relatively recent past, developmental psychology tended to steer away from this question. In part, we suspect this was a reaction to excesses in the mental health movement, and in pa a scientific judgement that we simply did not have any good evidence on the subj

Lately, there has been a renewed interest in practical problems of child ca and parenting. In part, this interest is an outgrowth of the extensive work on compensatory education - and on the growing suspicion that educational environme particulary part-time preschool environments, cannot by themselves reverse the consequences of poor development during the first three or four years of life. In part, renewed interest in child care reflects broadening theoretical interest the cognitive and emotional development of children during the first three years And in considerable part, interest in quality child care has been spurred by the research and publicity about the research of two specific people - Burton White and Jean Watts.

If we are to define "good homes" - or rather "good child-rearing environm we must be able to describe the outcomes of such environments - presumably

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"good children". The current, slightly less loaded term, is the "competent child". There appears to be a growing convergeance in the research literature describing su children. Several writers note advanced skills in the area of communication (White and Watts, 1973; Ainsworth & Bell, 1973; Clark-Stewart, 1974; Fowler, 1972; Prescott, 197 and Murphy and Moriarity, 1976. These writers also note various other evidences of advanced cognitive skills. That "competent children" should show early evidence of what we colloquially call brightness comes as no surprise. What is perhaps more interesting is the stress that most of these writers also place on social competenc By the age of three, and for some writers by the age of one, some children are apparently markedly more effective at gaining and maintaining adult attention and assistance in positive ways. The same phenomenon is sometimes described as a characteristic of the child (White and Watts, Prescott, Murphy and Moriarity), sometimes as a characteristic of interaction between child and adult (Ainsworth) an sometimes as a characteristic of the adult (Clarke-Stewart). Measurement appears t be the same in all cases - observation of adult-child interaction. Prescott's and Cazden's 1973 data on children in day care centres clearly suggest that by age thre the ability to gain adult attention and support has become a child characteristic which appears to be somewhat independent of who the adult is.

Thus we have the beginnings of a description of the competent child - one who is bright, and who is effective at gaining adult support. It must be noted at this point that we lack empirical longitudinal evidence on the later outcomes of such children - but it must also be admitted that intuitively we suspect that such children do for the most part continue to thrive in our school systems and probably our society. A second caveat that must be stressed is that there are probably substantial constitutional factors of both cognitive and temperamental natures affecting the development of competence as defined here. (See, for example, the wo of Thomas, Chess, and Birch, 1968, and Murphy and Moriarity, 1976)

There is, however, considerable evidence that environmental aspects play a ma role in the development of both social and non-social competence, and that the two

may well be closely related. For example, Ainsworth (1974) notes that children who have been treated responsively - with quick and appropriate responses to their crie and signals during the first year of life - show greater communication skills and more cognitive schemas at 12 months, and higher I.Q.'s at 17 months. Clarke - Stewart (1972) reports similar findings.

The White and Watts Study

White and Watts have not focussed specifically on adult responsiveness, althc their data on "social competence" would appear to index a similar phenomenon. Watt in particular, has identified a number on "environmental" variables (really mother-behavior variables) which are associated with the development of non-social and social competencies.

The White and Watts study involved observation and testing of two groups of children - type A who were expected to develop well on the basis of the performanc of older siblings, and type C who were expected to develop poorly on like evidence Assessments of social and non-social competencies confirmed these expectations between one and two years of age, and between two and three.

Watts' environmental measure, called the "human interaction scale" focusses o two main classes of variables: Activities and Techniques of Interaction. The Activity around which an interaction takes place is classified in terms of the opportunities for learning the activity provides. Watts' classification of activities is summarized in figure one. She also classified interactions in terms of the technique of interaction used by the adult.[1] Watts' classification of techniq is summarized in figure two.

Figures 1 & 2 about here

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1. Watts' approach implies a one-way direction of effects - from adult to child. improvement would adopt a two-way approach - noting child's techniques with adult.

Using these two classification schemes,[2] Watts coded observational data sampled between 9:00 a.m. and 5:00 p.m. for each child in the study's "A" and "C" homes. Briefly summarized, her data indicate:[3]

1. That "A" mothers spend more total time with their children (32 vs. 22 per cent)
2. That most of the difference in time spent with children is accounted for by highly intellectual activities" (10 vs. 3 per cent of total time)
3. That "A" mothers spend more time using "teaching techniques" (4 vs. 1 per cent)
4. That "A mothers spend more time using "facilitative" techniques (8 vs. 11 per cent).

These results, while not pointing directly to responsiveness on the part of adults, hint at it both through the overall differences in time spent interacting with the child, and in time spent using facilitative techniques (e.g. providing servic and assistance, providing materials, participating, etc.) The results do point to direct efforts to increase cognitive (e.g. "highly intellectual") skills.

The Present Study

The present study was a pilot effort to apply Watts' Human Interaction Scale to day care environments - specifically in two day care centres. The focus of concern was on the environments, not the outcomes. We can ask whether, in certain ways, these centres look like Watts' "A" or "C" centres. We cannot ask how the centres influence whether the children look like "A" or "C" children at age two without knowing what the children were like before entering the centre, and without knowing what the children's homes are like. This would obviously involve a major

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2. Watts developed a number of other indices which are not reported here.
3. Data presented here refer to Watts data for ages 22 and 26 months. Similar trends but different absolute figures were obtained at other age levels.

longitudinal study.

The two centres studied are both licensed day care centres in Toronto. Both provide care for infants and toddlers. One (Henceforth referred to as "Centre One") is part of a student training programme, and has been involved in a major research programme concerning the development of curricula for infant and toddler day care. This centre is not entirely dependent upon fees for its operations. The other (Henceforth referred to as "Centre Two") is a private centre, entirely dependent on fees for costs, and without any significant source of students or volunteers to supplement staff. The effective adult-child ratio at Centre One was approximately 1:3 while at Centre Two the ratio was approximately 1;6.

Sampling. Six children of 22-26 months were observed at each centre, matched for age and sex. Each child was observed for a total of 45 minutes spread over the period 9:00 a.m. to 5:00 p.m. during January and February,1975.

The first three children in each centre were videotaped for three 15 minute intervals - morning, lunch, and afternoon, with one observation outside. A review of the study at this point indicated that more sophisticated sampling of the two environments would be appropriate.

Roughly using Barker's (1968) conception of "behavior settings," we undertook a behavior setting survey at each centre in order to determine the various aspects of each environment which ought to be sampled. These surveys were conducted by observing six sample children at centre one and five sample children and n another child at centre two between 9:00 a.m. and 5:00 p.m., excepting lunch and sleep times. Every 10 minutes, each child's location, activity, and mode of interaction (alone, adult - individual, adult-group, peer individual, or peer-group) was noted.[a] On the basis of these surveys and of the regular schedules of the

a. In a future study, we would sample either more freuqently or more children.

the centres, behavior settings and average time in each setting were determined. These data were used to determine observation schedules for the second three child in each centre, and for weighting observed data in order to estimate overall types of experience received by the children in each centre. Descriptions of the behavi settings are provided in the Results Section.

The second three children in each centre were videotaped for six intervals c 7 to 8 minutes each, again totalling 45 minutes. The six intervals were to includ indoor and outdoor play in the morning and indoor play in the afternoon. At centr one, where two different playrooms were used (one for gross-motor activity), at le one interval was scheduled in the downstairs room. Lunch was not included as data from the first three children indicated little variation within or between centres this setting. Structured Activities (adult-led teaching, stories, games, and song were picked up as they occurred as were transitional and toilet settings. (Insufficient instances of the latter were observed and they had to be excluded fr the final analysis of the data).

Coding Procedures. The data were coded accoring to instructions for Watts' Human Interaction Scale (White and Watts, 1973, pp 468-505.) with the following modifications

1. Two modes of interaction with adults were identified: adult-individua and adult-group.

    a. Adult-individual interaction consists of situations in which an adult is interacting directly with the subject child. This includ both 1:1 situations, and group situations when the adult is speaki directly to the subject child.

    b. Adult-group interaction consists of situations in which the child a member of an adult-led group, and is attending to the group's activity (based on eye focus) but not being directly addressed by the adult. (Note - this includes situations where the subject child is in the adult's lap.)

Having determined whether an interaction was in the group or individual mode (it could shift back and forth easily), the interaction was then coded for activit and technique according to Watts' category defitions.

2. Watts' scheme specifies coding of who initiates activities but not who initiates interactions. We coded these separately.

3. Watts codes child compliance to adult requests or suggestions, but not adult compliance to child requests or suggestions. We added this.

Coding Reliability. The three authors spent a considerable period training in the use of Watts' scale with videotapes. Recoding of data by the senior author from four 7 minute tapes coded by each of the other authors never varied by more than 2 percentage points in percentages of time assigned to various Activity or Technique categories. These variations are substantially smaller than the main differences which will be described in this study.

Results

Behaviour Settings. We observed seven behavior settings at Centre A and six at Centr These are shown in Fig. Three. Other settings, including naps and walks, were not observed due to time limitations and weather.

Fig. Three

Behaviour Settings by Centre

Centre A	Centre B
Freeplay-upstairs Children are free to use a variety of small toys, construction materials, clothes, doll centre, or look at animals or out the window. Several adults available to read to children, deal with altercations, provide assistance, and sometimes make suggestions.	Freeplay Children are free to use variety of small toys, or look out of the window. Some creative mate are usually supplied - without adu direction. Music is usually playe One adult available to provide materials and deal with altercati Some spontaneous peer interaction observed.
Freeplay - downstairs This room is more oriented towards gross motor activities including large wheeled toys (rideable and pushable), and climbing equipment (sometimes), as well as dolls, blankets, and other toys. Again, adults are available to provide assistance, suggestions, and reading.	
Structured Activity Groups of two to four children work with an adult in any of a wide variety of tasks involving creative materials, books, and other activities. Verbal labelling and concept development is stressed.	Structured Activity The entire group (10 to 12 children) sings, dances with adult, or is read to. Some effort to build vocabulary a concepts.
Outside Children play with large-motor toys or with snow, sleds, or other children. (This was the only setting at Centre A in which we observed a noticeable amount of spontaneious peer interaction). Adults keep watch, provide materials, and sometimes participate with the children.	Outside. Children play with large motor toys and on equipment. Som spontaneous peer interaction observed. Adults limit own activ to preventing accidents.
Eating This includes both the main noon meal and morning and afternoon snacks. Children generally sit in a circle or at a table and are provided with food by an adult.	Eating (same as centre A)

Transitions Not a behavior setting per se, this includes movements from one setting to another and getting into or out of snowsuits.

Toilet One or two children at a time are taken to the toilet. In addition to toilet routines, this setting is used for language development with pictures on the wall and general discussion.

Transitions (same as centre A)

Toilet Four or five children taken at a time to the toilet No adult-child interaction beyond basic toilet routines.

Table one shows the proportions of time spent in different behaviour settings each centre. Centre One provided somewhat more time in freeplay settings (39 minute Centre Two provides somewhat more time in structurered activity (16 minutes), outsid (8 minutes), eating (7 minutes), and transitions (7 minutes).

It is possible that some of the differences in setting times are influenced by the higher ratio of children to staff in Centre Two. For example, eat and transitions (dressing, etc.) probably take longer when there are fewer adults to assist the children.

Table 1 about here

Total Interaction Time with Adults Table 2 indicates that in Centre One, children received about 167 percent more adult-individual interaction than children in Centre Two (57 versus 20 minutes). Centre one children received 26 per cent more adult-group interaction (48 vs. 3 Thus total adult contact time during the period observe (9-11:30 and 2:30-5:00, not including transition and toilet settings) amounted to 105 minutes or 38 per cent of total time at Centre One and 61 minutes or 22% of tota time at Centre Two. Comparisons with Watts' findings will be presented further on in this paper, but we will note here that Watts' "A" toddlers were interacting with adults 32 per cent of observation time while her "C" toddlers were interaction 22 pe cent of the time.

Table 2 about here

Proportions of interaction time differed substantially by setting in both Cent Stuctured activity settings resulted in the highest levels of interaction in both settings (75 per cent of structured activity time involved adult interaction at both centres) Eating involved little interaction in both cent (about 15% of time, mostly involving supply offood.) The centres differed in amount

of adult interaction in freeplay (36 versus 11 per cent) and outside (30 versus 0 per cent). Considerably more adult-individual interaction occurred in freeplay and structured activities in Centre One.

Activities Table 2 also presents data concerning Activities. In Centre One, an average of 60 minutes a day were spent interacting with adults in "highly intellectual activities". (e.g. perceptual-motor learning, verbal-symbolic learnir concrete reasoning, expressive skills, and executive skills). Half of this interac time was spent in the adult-individual mode. In Centre Two, an average of 39 minu a day were spent interacting with adults in "highly intellectual activities". Abo a quarter of this interaction time was spent in the adult-individual mode.

In Centre One, both individual and group "highly intellectual" interactions occurred in freeplay and structured activity settings. Examples include incidenta teaching and reading (freeplay), and work with plasticene and paint along with dir language teaching (structured activity). Most of the adult-individual highly intellectual interactions in Centre Two occurred in Freeplay, while nearly all suc interactions in structured activity were adult-group. (This probably reflects the higher ratio of children to adults in Centre Two, where structured activity usuall involved groups of six to ten compared to groups of no more than four at Centre On

Techniques of Interaction Table three compares techniques of interaction ir the two settings. Table three indicates that in the adult-individual mode substantial more use is made of teaching (9 vs. 1 minutes), facilitation (35 vs. 16 minutes) and observation (9 vs. 1 minutes) at Centre One than at Centre Two. Slightly more group teaching occurred at Centre Two, (21 vs. 19 minutes) while there was less group facilitation (16 vs. 29 minutes).

Teaching occurred at Centre One in both freeplay and structured activity settings. (The large amount of "teaching" in freeplay - 18 minutes - mostly represents reading to children.) Facilitation occurred in all settings except outside at Centre Two. The largest amounts of individual faciliation occurred in

occurred in feeeplay. Observation occurred almost entirely at Centre One only, which may reflect both ratios of children to adults and the training of the staff.

Comparisons with Watts' Findings Table four compares Watts results with "A" and "C" children with findings from the two day care centres.

Although the total time devoted to individual adult-child interaction was lower at the day care centres than in Watts' "type A" homes, the total adult-individua interaction time devoted to activities likely to support advanced competence development (language, fine motor skills, sequenced executive activities and concrete mental operations) was about the same at centre one as in Watts' "A" homes (11% vs. 10%.) At centre two about the sameadult-individual time was devoted to these "highly intellectual activities" as in Watts' "C" homes - 4% vs. 3%. An additional 10 to 11 pe of waking hours involved adult-group interaction in these competence-supporting activities at each centre.

When techniques of interaction are considered, children in centre one spent more time in individual and group adult interactions classified as "teaching" (10%)' and "facilitation" (23%) than children in Watts' "A" homes (4% and 18% for "teaching" and "facilitation" respectively). In the second centre, children also spent more time than children in Watts' "A homes in "teaching" interactions (8% vs. 4%) but about the same time in "facilitation" interactions than children in Watts' "C" homes (12% vs. 11%). Children in Watts' "C" homes spent only 1% of time in "teaching" interactions. When only individual interactions with adults are considered, both centres fall below the levels reported in Watts' "A" homes. Centre one children spent 3% of time in individual "teaching" and 12% of time in individual "facilitative" activities.

What preliminary conclusions can we draw regarding this comparison of homes and day care centres as competence-supporting environments for toddlers? Although both centres fall below total levels of individual adult-child interaction achieved

in Watts' highly competence-supporting homes, centre one's provision of high levels of individual interaction in "highly intellectual" activities and nearly equal levels of "teaching" techniques combined with additional group interaction, may be sufficen sufficient to support development of high levels of competence in children. Fowler and Kahn's (1974) findings that children from the same centre retained cognitive and social gains by age five supports this conclusion.

The effects of experience in centre two are unknown. It should be noted that children in the second centre could not, as a group, be described as unhappy or noticeably retarded in their functioning. We did not undertake competence assessments as we felt that without longitudinal data and knowledge of home conditions, comparisons of competence levels of children in the two centres would be unfair.

Discussion

The Adult-group mode of interaction As indicated previously, a major difference between home and day care environments is the much-increased use of adult-group interaction in centres. Watts did not distinguish between 1:1 and group situations although examples she cites in definitions of categories make it clear that some interactions in her study certainly involved at least one other sibling. Differences in the impact of individual and group interactions , and effects of the size of groups on various outcomes would be fruitful topics for investigation. Outcome variables should include both non-social and social competencies. In this area, it is worth noting Fowler's (1970) observation that for some learning situations, group settings may be preferable.

Behaviour Setting Sampling During the course of the study, the investigators became aware of the critical importance of an adequate behaviour setting survey in order to sample environmental effects. In the present study, no comparisons between children could be made because time in behavior settings was not cont: Shore's 1963 study of preschool ecology similarly illustrates the importance of sampling all settings in a centre, and knowing the proportions of time children are in each setting. Research comparing the effects

of centres' use of different settings, and children's use of different settings on the development of behaviour and skills within centres would appear to be desireable.

Adult Responsiveness Future analyses of the present data will be concerned with the issue of adult responsiveness to children's initiatives. A cursory review of the data suggests that there are relatively few instances of direct requests for adult assistance or attention other than requests for food in eating settings. At Centre One, these appear to have been met. At Centre Two, there were even fewer requests. Centre One staff often initiated assistance before it was sought. It is possible that group care may tend not to encourage seeking support - either through low responsiveness or through anticipation of needs - and may in this sense, not build up social competencies. Further research on this problem would be useful.

Adult: Child Ratios The present research does not shed any systematic light on this contentious issue. At several points, we did note that ratio problems were probably related to differences noted between the two centres: e.g. relative times spent in transitional and eating settings, and more importantly, relative amounts of adult-individual and adult-group interaction. Clearly, the total amount of adult-individual interaction is limited by the adult:child ratio. In order to achieve the 32 per cent level reported by Watts in "A" homes, the obvious maximum ratio is 1:3. In reality, a lower ratio would be needed as not all an adult's time can be spen in 1:1 interaction. It is interesting to note that there was about 2.6 times as much adult individual interaction at centre one as at entre two, while there were approximatel twice as many adults available at centre one. At centre two, the disposition of staff tended to place one responsible for playroom activities (including freeplay, structure activity and snacks - but not lunch) while the second staff member dealt with toilet and other routines. This effectively reduced opportunities for direct interaction.

Quality vs. Quantity of Interaction The preceeding observations regarding use of adult-individual interactions and dispositions of staff indicate that ratio alone does not determine the quality of day care environments. Similarly, data presented regarding differences between behaviour settings in nature of activities and techniques of interaction suggest that serious consideration must be given by day care supervisors to the impact of the relative use of different settings.

Assessment of the Direct Impact of Day Care Environments on the Development of Competence. The present research was concerned how two day care environments approximated home conditions associated with the development of social and non-social competencies. This research does not indicate whether provision of a competence-supporting environment in day care actually produces more competent children. (Fowler and Khan's research, cited previously, does suggest that the Centre One program supports above-average competence development. Fowler and Khan found no evidence that children in day care surpassed matched home-reared controls in the follow-up study). In order to examine the question of the impact of day care environments on development, and the related question of the relative impact of home and day care, longitudinal study of children including both home and day care settings would be necessary. In this regard, it is worth noting that a child in full-time day care spends about 50 per cent of his waking hours away from the day care centre.

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Figure 1 Watts' Classification of Competence-Supporting Aspects of Children's Activities

Intellectual	Moderately Intellectual	Non-Intellectual	Social
ons likely to lead to tual gain for the child)	(Situations of generalized experience that are not readily related to cognitive acquisition.)	(Routine situations that have little likelihood of promoting cognitive gain)	(Situations in which the primary focus is emotional expression, or social behavior).
nl and symbolic learning. elling, counting, sentence attending to books, onal, T.V., etc.	1. Exploration and play with household items e.g. getting into things, getting out pots and pans, misuse of property, etc.	1. Basic care, e.g. eating, toilet, washing, dressing, etc.	1. Positive emotional and social expression, e.g. smiles, kisses, jumping up and down for joy, helping, comforting, statements (I love you, cookie for Jimmy, rough-housing, social games, etc.
eptual, spatial and tor learning, e.g. , matching, dealing with istance, angles; fitting, g, molding; using , binoculars, scissors,etc.	2. Play with toys, e.g. manipulating or using toys, moving toys, abuse of toys.	2. Gross motor activity, e.g. crawling, walking, running, climbing, balancing, using playground equipment, etc.	2. Negative emotional and social expression, e.g. whining, crying, hitting, pushing, throwing, breaking, saying "I don't like you," "I'm scared", etc.
crete reasoning, e.g. nd seek", experimenting avity, categorizing, ng reflections, exper- g with mechanical , anticipating effects,	3. Exploration of nature. Examining plants and flowers, watching fish or animals, walks in woods or parks, play with pets.	3. Unspecific behaviour e.g. uncategorizable and wandering behaviour	3. Neutral emotional and social expression, e.g. seeking emotional reassurances, seeking attention as end in itself, using greetings and other social forms for attention, etc.
ressive skills, e.g. ing, assigning roles le or objects, g representational s with paint, blocks, elling stories, etc.	4. Gaining general and routine information, e.g. requests routine information, checking knowledge, statements of fact, children's T.V., adult T.V.		
cutive skills. e g. g out instructions, ng steps in a game, , household chores. volve carrying out ed behaviour).			

Figure 2 Watts' Classification of Interaction Techniques

Teaching	Facilitation	General Information Giving	Observation or Interpreting	Restriction
elling, explaining g what child providing , experiences ept n.	1. Justification-Rationale e.g. "because" statements, answers to "why", ~~justification~~ for directives. 2. Active participation e.g. join in play or tasks, dramatizing, roughhousing, playful teasing 3. Suggestion, command, or consent. e.g. requests, commands, suggestions, (including gestures), providing choices. 4. Positive reinforcement, affection. e.g. praising, rewarding, showing pleasure, favorable comparison, hugging, say "I like you", defending, protecting, making excuses for 5. Focussing, e.g. suggestions, physical redirection, which bring child back to ongoing activity. 6. Service or assistance. (self-explanatory) 7. Providing materials. (self-explanatory) 8. Changing location e.g. any moving of child except to terminate activity.	e.g. Comments about routine facts, reminders about rules, low-level social conversation.	e.g. observing, checking up on child, listening to child, interpreting what child says, wants, or feels.	1. Restriction-prohibition e.g. saying "no" or "don't", ask child not to do something, refuse permission, etc. 2. Negative reinforcement, hostility, e.g. blocking, or removing child or object, punishments, threats to punish, criticising, expressing disapproval, rejecting, derogatory comments, assaulting child, malicious teasing, avoiding child. 3. Distraction, ignoring e.g. diverting, attention by providing alternatives, suggesting activity, talking about something else. Ignoring attention-seeking, (either intentionally or because of other demands.) 4. Refusal to help or comply. e.g. refusing, postponing, suggesting that other person help. (Motive may be inconvenience, rather than objection to child's activity).

Table 1. Estimated Average Time Spent in Behaviour Settings in Each Centre (Winter, 1975) (based on 9:00-11:30 a.m. and 2:30-5:00 p.m.)

	Centre One		Centre Two	
	minutes	percent	minutes	percent
Freeplay	171.	57%	132.	44%
(upstairs)	(122)	(41%)		
(downstairs)	(49)	(17%)		
Structured Activity	35	12%	51	17%
Outside	33	11%	41	14%
Eating	34	11%	41	14%
Transition	15	5%	22	7%
Toilet	12	4%	13	4%
Total	300	100%	300	100%

Table 2 Minutes of Interaction by Centre, Type of Activity, Behaviour, Settings, and Interaction Mode.

Setting, Centre and Mode	Total Time in Setting	Total Inter-action Time	Highly Intell-ectual Activities	Moderately Intellectual Activities	Non-Intell-ectual Activities	Social Activities
Freeplay						
Centre One						
indiv.	174	33	17	5	7	5
group	174	26	19	5	0	0
Centre Two						
indiv	132	13	9	1	1	1
group	132	1	1	0	0	0
Structured Activity						
Centre One						
indiv.	36	17	12	2	1	2
group	36	10	10	0	0	0
Centre Two						
indiv.	51	2	1	0	1	0
group	51	36	27	4	5	0
Outside						
Centre One						
indiv.	33	0	0	0	0	0
group	33	10	0	6	4	0
Centre Two						
indiv.	42	0	0	0	0	0
group	42	0	0	0	0	0
Eating						
Centre 1						
indiv.	33	5	0	0	4	0
group	33	0	0	0	0	0
Centre 2						
indiv.	42	5	1	0	5	0
group	42	1	0	0	1	0
Total						
Centre 1						
indiv.	276	57	29	8	12	7
group	276	48	31	12	5	0
Centre 2						
indiv.	267	20	11	1	7	1
group	267	38	28	4	6	0

Table 3. Minutes of Interaction by Centre, Technique of Interaction, Behaviour Setting, and Interaction Mode.

Setting, Centre and Mode	Total Time in Setting	Total Interaction Time	Teaching	Facilitation	Routine Talk	Observation	Restriction
Freeplay							
Centre 1							
indiv.	174	33	3	23	2	5	2
group	174	26	16	9	0	0	0
Centre 2							
indiv.	132	13	0	11	0	1	2
group	132	1	0	1	0	0	0
Struct. Activity							
Centre 1							
indiv.	36	17	4	8	1	4	1
group	36	10	2	8	0	0	0
Centre 2							
indiv.	51	2	1	1	0	0	1
group	51	36	21	14	0	0	0
Outside							
Centre 1							
indiv.	33	0	0	0	0	0	0
group	33	10	0	10	0	0	0
Centre 2							
indiv.	42	0	0	0	0	0	0
group	42	0	0	0	0	0	0
Eating							
Centre 1							
indiv.	33	5	0	4	0	0	0
group	33	0	0	0	0	0	0
Centre 2							
indiv.	42	5	0	1	0	0	1
group	42	1	0	1	0	0	0
Total							
Centre 1							
indiv.	276	57	9	35	2	9	2
group	276	48	19	29	0	0	0
Centre 2							
indiv.	267	20	1	16	0	1	1
group	267	38	21	16	0	0	1

Table 4. Comparison of Percentages of Time Spent By 21-26 Month Old Children with Adults in Good and Poor Homes (Watts' data) and in Two Day Care Centres - By Activity and Interaction Technique

	Per Cent Total Time Spent Interacting with Adults	Highly Intel.	Moderately Intel.	Non-Intell-ectual	Social	Teach.	Facil-itate	Routine Talk	Obser-vation	Restrict-ion
ts "A" Homes[1]	32	10	10	11	2	4	18	3	5	4
ts' "C" Homes[1]	22	3	10	7	2	1	11	1	4	6
tre 1										
liv. Inter-tion	21	11	3	4	3	3	13	1	3	1
oup Inter-tion	18	11	4	2	0	7	11	0	0	0
oined	38	22	7	6	3	10	23	1	3	1
tre 2										
liv. Inter-tion	7	4	0	3	1	0	6	0	0	4
oup Inter-tion	14	10	1	2	0	8	6	0	0	0
oined	22	15	2	5	1	8	12	0	0	4

[1] Based on tables 48 and 49 (pp. 184-185) in White, B. and Watts, J.C. Experience and Environment, Englewood Cliffs, N.J.: Prentice Hall, 1973.